

CLAIMS:

1. A retractor assembly suitable for hip or other joint surgery, the assembly comprising or including

a structural member capable of being used as a retractor, the structural member having, as a proximal region, a handle or manipulation control region ("handle") extending through a curved region to a distal region adapted for use in a suitable patient,

a light ducting member or assembly of members ("*light ducting means*") at least in part in substantial conformity to the curved region adapted (with respect to the structural member with a light inlet nearer the proximal region than the distal region) in use to receive light and reliant on internal reflection of the light, to transmit such received light about at least part of the curved region to an emission outlet or outlets ("*light outlet*") which will cast light to a zone at and/or about said distal region, and

a shield overlying at least that part of the light ducting means in substantial conformity to at least part of the curved region,

wherein the light ducting member, the shield and the structural member can be brought into assembly so that directly and/or indirectly each of the light ducting member and the shield is in a supported condition relative to the structural member.

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2. A retractor assembly according to claim 1 in which the light ducting member receives ducted light.

3. A retractor assembly according to any one of the preceding claims in which the supported condition provides directly and/or indirectly a support of both a proximal and distal region of the ducting member and/or both a proximal and distal region of the shield.

4. A retractor assembly according to any one of the preceding claims in which indirect support for the light ducting member might be provided by a direct support

by the structural member of the shield which by overlying the light ducting member thus provides support therefore relative to the structural member.

5 5. A retractor assembly according to any one of the preceding claims in which some forms of such direct and/or indirect support can involve the light ducting means, whether as a member or an assembly of members, being engageable to the structural member by any appropriate means at or adjacent a distal region of the light ducting means.

10 6. A retractor assembly according to any one of the preceding claims in which the light ducting means, at least from its light inlet to its light outlet is a moulded member (of one or more material(s)) having a surface adapted to internally reflect light so as to favour ducting of light from the inlet to the outlet.

15 7. A retractor assembly according to any one of the preceding claims in which the outlet is an outlet that issues a beam of a band of light so that the light inlet is adapted to receive light from a fibre optic bundle, a light cable or the like and may be of a circular area whilst the surfaces surrounding the light path from the inlet to the light outlet is such as to duct the light to the more banded form light outlet.

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8. A retractor assembly according to any one of the preceding claims in which the assemble includes a light source from a LED or LEDs.

9. A retractor assembly according to claim 7 in which any such banded outlet
25 conforms more to the transverse extent of the structural member at, at least the more distal part of the curved region.

10. A retractor assembly according to any one of the preceding claims in which the curved region has a major transverse axis of the structural member normal to the
30 curving thereby to provide a low profile for the curve region.

11. A retractor assembly according to any one of the preceding claims in which the light ducting means is an assembly of a moulded plastics component having the light inlet and the light outlet and a means of association thereof to the member.

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12. **A method of providing a retractor assembly** as aforesaid, said method comprising or including taking a light ducting means (and preferably also a shield) from a pack and associating the same with the structural member and the shield.

10 13. A method according to claim 12 in which a shield is also associated with the retractor assembly.

14. A method according to claim 12 or 13 in which structural member is sterile prior to such association of the light ducting means and shield therewith.

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15. A method according to claim 12 to 14 in which the light ducting means is disposable.

16. A method according to claim 12 to 15 in which the shield is disposable.

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17. **A retractor useful in surgery (e.g.; hip surgery)**, said retractor having
a main structural member defining
a handle region,
a distal region, and

25 an intermediate region, said intermediate region curving on planes normal to its main transverse dimension thereby to define a low profile form having a "concave" lower side and a "convex" upper side,

a light duct capable of ducting light it receives, said duct, at least in part away from its handle proximate inlet end, substantially conforming to the

30 intermediate region so as to maintain a low profile thereover whilst having an

emission end capable of emitting light the duct has received towards a zone in which said distal region of the main structural member is being operated,

attachment apparatus integral with or attaching to the light duct at or adjacent the inlet end of the light duct engaged with or for engagement with the
5 main structural member, and

a shielding member attachable to at least one of

- i) the attachment member,
- ii) the light duct, and
- iii) the intermediate member

10 so as, also in a low profile at least in part away from its handle proximate end, of substantially conforming to the light duct and/or the adjacent intermediate region.

18. A retractor assembly according to claim 17 in which the light duct is a
15 moulded transparent plastics member preferably having the attachment integrally moulded therewith.

19. A retractor assembly according to claims 17 or 18 in which the light duct is a fabrication from two moulded components.

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20. A retractor assembly according to claim 17 or 19 in which said light duct is adapted at its inlet end to receive light ducted via light cable, a fibre optic bundle, tube, light cable or the like.

25 21. A retractor assembly according to claims 17 to 20 in which the ratio between the light inlet surface area and light outlet surface area is a ratio of no less than 1:1 and no more than 1:11.

22. A retractor assembly according to claim 21 in which the ratio between the
30 light inlet surface area and light outlet surface area is 1:2.2

23. A retractor assembly according to claim 17 to 22 in which the emission end of the light duct is substantially of a flattened section so as to better conform to the low profile of the intermediate region.

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24. A retractor assembly according to claim 23 in which the flattening and broadening is such that the outlet is thinner than the inlet diameter or notional diameter and is at least as wide as two such diameters.

10 25. A retractor assembly according to claim 24 in which the flattening and broadening is such that the outlet is thinner than the inlet diameter or notional diameter and is at least as wide as three or more such diameters.

26. A retractor assembly according to claim 24 and 25 in which the light duct
15 splays to said flattened form from a non flattened form at the inlet end.

27. A retractor assembly according to claim 23 to 26 in which the shielding member has a form adapted to conform closely to the flattened form of the light duct.

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28. A retractor useful in surgery (e.g.; hip surgery), said retractor having
a main structural member defining
a handle region,
a distal region, and

25 an intermediate region, said intermediate region curving on planes normal to its main transverse dimension thereby to define a low profile form having a "concave" lower side and a "convex" upper side,

a light duct or ducts capable of ducting light it receives, said duct(s), at least
in part away from its (their) more handle proximate inlet end, substantially
30 conforming to the intermediate region so as to maintain a low profile thereover

whilst having an emission end capable of emitting light the duct has received towards a zone in which said distal region of the main structural member is being operated,

attachment apparatus integral with or attaching to the or each light duct at or
5 adjacent the inlet end of the light duct(s) engaged with or for engagement with the main structural member,

a shielding member attachable to at least one of

- i) the attachment member,
- ii) the light duct(s), and
- 10 iii) the intermediate member

so as, also in a low profile at least in part away from its handle proximate end, of substantially conforming to the light duct and/or the adjacent intermediate region.

15 29. A retractor assembly suitable for hip or other joint surgery, the assembly comprising or including

a structural member capable of being used as a retractor, the structural member having, as a proximal region, a handle or manipulation control region ("handle") extending through a curved region to a distal region adapted for use in a
20 suitable patient,

at least one light ducting member ("*light ducting means*") carried directly or indirectly by the structural member with a light inlet in use to receive light and, reliant on internal reflection of the light, to transmit such received light to an emission zone ("light outlet") which will cast light to a zone at and/or about said
25 distal region, and

at least one LED or other light source carried directly or indirectly by the structural member and positioned to provide light inputs into the inlet(s) of the light ducting means, and

provision for mounting a battery and completing the operating circuit of the
30 LED(s) or other light source(s) (e.g. a dock and cover),

wherein when assembled the light ducting means can illuminate the and/or about the distal region.

30. A retractor assembly according to claim 29 in which a shield overlays at least
5 part of the light ducting means.

31. A retractor assembly according to claim 29 or 30 in which the completion of the operating circuit of the LED or other light source is performed by a switch.

10 32. A retractor assembly suitable for hip or other joint surgery, the assembly comprising or including

a structural member capable of being used as a retractor, the structural member having, as a proximal region, a handle or manipulation control region ("handle") extending through a curved region to a distal region adapted for use in a
15 suitable patient,

a light ducting member or assembly of members ("*light ducting means*") at least in part in substantial conformity to the curved region adapted (with respect to the structural member with a light inlet or light inlets) in use to receive light and, reliant on internal reflection of the light, to transmit such received light about at
20 least part of the curved region to an emission outlet or outlets ("light outlet") which will cast light to a zone at and/or about said distal region,

at least one LED or other light source carried directly or indirectly by the structural member and positioned to provide light inputs into the inlet(s) of the light ducting means,

25 provision for mounting a battery and completing the operating circuit of the LED(s) or other light source(s).

33. A retractor assembly according to claim 32 in which a shield overlays at least part of the light ducting means.

34. A retractor assembly according to claim 32 or 33 in which a cover for a battery, forming at least part of said provision for mounting a battery and completing the operating circuit, is present.

5 35. **A surgical retractor having**

a retractor body,

at least one light duct carried (directly or indirectly) by the retractor body,

a LED or other light source carried (directly or indirectly) by the retractor body for the or each light duct,

10 a battery powered circuit carried by the retractor body (directly or indirectly),
and

a battery mounting for battery location in the circuit,

wherein the retractor has a handling end and a body insertion end and the light duct(s) is (are) adapted to beam light received from the LED(s) and/or other

15 light source(s) to and/or about the body insertion end of the retractor body.

36. A retractor according to claim 35 in which a shield overlays at least part of the light ducting means.

20 37. **The use of a retractor assembly or retractor** as claimed in any one of claims 1 to 11 and 17 to 36 in which the inlet end of the light transmitter receives a feed of light to illuminate a zone in which the distal region of the main structural member is being operated.

25 38. The use according to claim 37 which said involves feeding light into the light transmitter or duct thereby to illuminate part of the patient (e.g.; during a hip replacement operation).

39. A retractor or retractor assembly as claimed in any one of claims 17 to 28 and 35 to 36 that is useful in hip surgery, said retractor capable of being assembled and disassembled by attachment and removal respectively of components.

5 40. A retractor or retractor assembly according to claim 39 in which some of the components can be disposable but preferably each is capable of being cleaned for reuse.

41. A structural member of a retractor assembly or retractor as claimed in any
10 one of claims 1 to 11, 17 to 36, 39 and 40.

42. A light ducting means or member of a retractor assembly or retractor as claimed in any one of claims 1 to 11 and 17 to 36, 39 and 40.

15 43. A sterile light ducting means of claim 42 in a pack therefor.

44. A shield suitable of a retractor assembly or retractor as claimed in any one of claims 1 to 11, 17 to 36, 39 and 40.

20 45. A combination in a sterile pack of a light ducting means and a shield as defined in claims 43 and 44.

46. A method of treating a mammalian patient (whether a human being or otherwise) which involves the operative use of a retractor assembly or retractor as
25 claimed in any one of claims 1 to 11, 17 to 36, 39 and 40.

47. A retractor substantially as herein described with reference to the accompanying drawings.